

1       What is claimed is:

2

3       1. A pipe used in a fluid conveyance system, the pipe having improved corrosion resistance,  
4 comprising:

5

6       a pipe body formed of a ferrous metal, the pipe body having an exterior surface and an interior  
7       surface, a length and opposing end openings; and

8

9       a corrosion resistant coating applied to at least a selected one of the exterior and interior surfaces,  
10      the corrosion resistant coating comprising an aqueous phenolic resin dispersion.

11

12      2. The pipe of claim 1, wherein the aqueous phenolic resin dispersion is a high molecular weight resin  
13      that is modified to include pendant ionic moieties on a phenolic backbone structure.

14

15      3. The pipe of claim 2, wherein the coating comprises a continuous aqueous phase and, dispersed  
16      within the aqueous phase, the reaction product of a phenolic resin precursor and a modifying agent,  
17      wherein the modifying agent includes at least one ionic group and at least one functional moiety that  
18      enables the modifying agent to undergo condensation with the phenolic resin precursor.

19

20      4. The pipe of claim 3, wherein the resulting dispersed phenolic resin reaction product includes at  
21      least one phenolic ring to which is bound the ionic group from the modifying agent.

22

23      5. The pipe of claim 4, wherein the modifying agent is an aromatic compound.

1       6. The pipe of claim 4, wherein the modifying agent is sulfate, sulfonate, sulfinate, sulfenate or  
2       oxysulfonate and the reactive functional moiety is a hydroxy or hydroxyalkyl.

4       7. An accessory component used in a fluid piping making up a part of a waterworks system, the  
5       accessory component comprising:

7       a ferrous metal body having an exposed exterior surface; and

9       a corrosion resistant coating applied to at least the exposed exterior surface, the corrosion resistant  
10      coating comprising an aqueous phenolic resin dispersion.

12      8. The accessory component of claim 7, wherein the component is selected from the group consisting  
13      of:

15      glands, fittings, mechanical joints, swivel hydrant fittings, push-on fittings, service boxes, valve boxes,  
16      meter boxes, restraint joint devices, nuts, bolts and external wedge devices.

18      9. The accessory component of claim 7, wherein the aqueous phenolic resin dispersion is a high  
19      molecular weight resin that is modified to include pendant ionic moieties on a phenolic backbone  
20      structure.

22      10. The accessory component of claim 9, wherein the coating comprises a continuous aqueous phase  
23      and, dispersed within the aqueous phase, the reaction product of a phenolic resin precursor and a  
24      modifying agent, wherein the modifying agent includes at least one ionic group and at least one

1 functional moiety that enables the modifying agent to undergo condensation with the phenolic resin  
2 precursor.

3

4 11. The accessory component of claim 10, wherein the resulting dispersed phenolic resin reaction  
5 product includes at least one phenolic ring to which is bound the ionic group from the modifying  
6 agent.

7

8 12. The accessory component of claim 11, wherein the modifying agent is an aromatic compound.

9

10 13. The accessory component of claim 12, wherein the modifying agent is sulfate, sulfonate,  
11 sulfinate, sulfenate or oxysulfonate and the reactive functional moiety is a hydroxy or hydroxyalkyl.

12

13 14. A method of corrosion protecting a ferrous metal device used in the waterworks industry as a  
14 part of a fluid conveyance system, the method comprising the steps of:

15

16 coating at least an exposed metal surface of the ferrous metal device with a corrosion resistant  
17 coating which comprises an aqueous phenolic resin dispersion.

18

19 15. The method of claim 14, wherein the ferrous metal device is dipped into a treatment solution  
20 which includes the aqueous phenolic resin dispersion and at least an acid.

21

22 16. The method of claim 14, wherein the ferrous metal device is an iron pipe.

1       17. The method of claim 14, wherein the ferrous metal device is selected from the group consisting  
2       of:

3

4       glands, fittings, mechanical joints, swivel hydrant fittings, push-on fittings, service boxes, valve boxes,  
5       meter boxes, restraint joint devices, nuts, bolts and external wedge devices.

6

7       18. The method of claim 14, wherein the coating comprises a continuous aqueous phase and,  
8       dispersed within the aqueous phase, the reaction product of a phenolic resin precursor and a  
9       modifying agent, wherein the modifying agent includes at least one ionic group and at least one  
10      functional moiety that enables the modifying agent to undergo condensation with the phenolic resin  
11      precursor.

12

13      19. The method of claim 18, wherein the resulting dispersed phenolic resin reaction product includes  
14      at least one phenolic ring to which is bound the ionic group from the modifying agent.

15

16      20. The method of claim 19, wherein the modifying agent is an aromatic compound.

17

18      21. The method of claim 20, wherein the modifying agent is sulfate, sulfonate, sulfinate, sulfenate  
19      or oxysulfonate and the reactive functional moiety is a hydroxy or hydroxyalkyl.

20

21      22. The method of claim 15, wherein the acid is phosphoric acid.

22

23      23. The method of claim 14, wherein the dispersed phenolic resin is selected from the group  
24      consisting of Novolak resin and Resole resin.

1       24. The method of claim 14, wherein the ferrous metal device is dipped into a bath of the aqueous  
2       phenolic dispersion so that the coating autodeposits onto the exposed metal surface.

3

4       25. A pipe consisting essentially of a base pipe having a surface for coating and a coating applied to  
5       the surface and formed from a coating composition comprising Lord METALJACKET™ Coating  
6       sold by Lord Corporation of 1625 Riverfork Drive East, Huntington, IN 46750.

7

8       26. In a method for protecting a surface of a pipe comprising the steps of applying a coating  
9       composition to the surface of the pipe and allowing said coating composition to solidify, the  
10      improvement comprising providing as the coating composition the Lord METALJACKET™ Coating  
11      sold by Lord Corporation of 1625 Riverfork Drive East, Huntington, IN 46750.

12